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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,518	03/18/2005	Mamoru Usami	02157/0202679-US0	4313

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EXAMINER	
JONES, CRYSTAL L	
ART UNIT	**PAPER NUMBER**
2627	

DATE MAILED: 06/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/528,518	USAMI ET AL.	
	Examiner	Art Unit	
	Crystal Jones	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) *42-68* is/are withdrawn from consideration.

5)☒ Claim(s) *23-41* is/are allowed.

6)☒ Claim(s) *1-4,6-8,13-17 and 19* is/are rejected.

7)☒ Claim(s) *5,9-12,18 and 20-22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Election/Restrictions

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

The electron beam irradiation apparatus of:

I. Figs. 1-4, 13 and 14 [First Embodiment];

II. Figs. 5-12 [Second Embodiment]; and

III. Figs. 15-20 [Third Embodiment].

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

The following claim(s) are generic: Claims 1-13, 23, and 32.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: Group I is of an apparatus that

comprises a rotary driving unit, shield container, and an electron beam irradiation unit. Group II is of a manufacturing apparatus for forming a lubricating layer on a disc-shaped medium. Group III comprises the elements of Group I but also comprises a second rotational unit.

During a telephone conversation with Raffaele Demarco on May 18, 2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-41. Affirmation of this election must be made by applicant in replying to this Office action. Claims 42-68 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-3, 7, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kumasaka et al. (U.S. Publication 2002/0034152).

Regarding claims 1 and 13, Kumasaka et al. disclose an electron beam irradiation apparatus (Fig. 20) and method comprising: a rotary driving unit (Fig. 20, element 16) for rotationally driving an object (Fig. 20, element 15) to be rotated; a shield container for rotatably accommodating the object (Fig. 20, element 11); and an electron beam irradiation unit (Fig. 20, element 40) provided in said shield container so that the surface of the object is irradiated with electron beams from an irradiation window thereof (Fig. 20, element 44), wherein the surface of the object is irradiated with the electron beams during its rotation from said irradiation window of said electron beam irradiation unit.

Regarding claim 2, Kumasaka et al. disclose an electron beam irradiation apparatus according to claim 1, wherein said electron beam irradiation unit emits the electron beams under a low acceleration voltage [0129].

Regarding claims 3 and 14, Kumasaka et al. disclose an electron beam irradiation apparatus and method according to claims 1 and 13 wherein the acceleration voltage of

said electron beam irradiation until is 20 kV through 100 kV ([0129]; voltage ranges from 10 kV to several tens of kV).

Regarding claim 7, Kumasaka et al. disclose an electron beam irradiation apparatus according to claim 1, wherein a vacuumizing device (Fig. 20, element 28) for depressurizing the interior of said shield container is provided.

2. Claims 1, 7, 8, 13, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Masafumi (JP Publication 2002-163845).

Regarding claims 1 and 13, Masafumi discloses an electron beam irradiation apparatus (Fig. 1a) and method comprising: a rotary driving unit (Fig. 1a, element 13) for rotationally driving an object (Fig. 1a, element 14) to be rotated; a shield container (Fig. 1a, element 1) for rotatably accommodating the object; and an electron beam irradiation unit (Fig. 1a, element 3) provided in said shield container so that the surface of the object is irradiated with electron beams from an irradiation window (Fig. 1, element 34) thereof, wherein the surface of the object is irradiated with the electron beams during its rotation from said irradiation window of said electron beam irradiation unit.

Regarding claim 7, Masafumi discloses an electron beam irradiation apparatus according to claim 1, wherein a vacuumizing device for depressurizing the interior of said shield container is provided [0017].

Regarding claims 8 and 19, Masafumi discloses an electron beam irradiation apparatus and method according to claims 1 and 13, wherein the object has a disc shape (Fig. 1, element 14 is a disk having a disk shape), and an area extending in at least one

radial direction of the surface of the object is irradiated with the electron beams (See Fig. 3).

3. Claims 1-3, 7, 8, 13, 14 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Shin et al. (JP Publication 2001-202663).

Regarding claims 1 and 13, Shin et al. disclose an electron beam irradiation apparatus (Fig. 7) and method comprising: a rotary driving unit (Fig. 7, see unit below element 10) for rotationally driving an object (Fig. 7, element 10) to be rotated; a shield container for rotatably accommodating the object (Fig. 7, element 33); and an electron beam irradiation unit (Fig. 7, element 31) provided in said shield container so that the surface of the object is irradiated with electron beams from an irradiation window (Fig. 7, element 24) thereof, wherein the surface of the object is irradiated with the electron beams during its rotation from said irradiation window of said electron beam irradiation unit.

Regarding claim 2, Shin et al. disclose an electron beam irradiation apparatus according to claim 1, wherein said electron beam irradiation unit emits the electron beams under a low acceleration voltage [0066].

Regarding claims 3 and 14, Shin et al. disclose an electron beam irradiation apparatus and method according to claims 1 and 13 wherein the acceleration voltage of said electron beam irradiation until is 20 kV through 100 kV [0066].

Regarding claim 7, Shin et al. disclose an electron beam irradiation apparatus according to claim 1, wherein a vacuumizing device for depressurizing the interior of said shield container is provided [0072].

Regarding claims 8 and 19, Shin et al. disclose an electron beam irradiation apparatus and method according to claims 1 and 13, wherein the object has a disc shape (Fig. 7, element 10; also see Fig. 1), and an area extending in at least one radial direction of the surface of the object is irradiated with the electron beams (See Fig. 27).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4, 6, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumasaka et al. (U.S. Publication 2002/0034152) in view of Nishi (U.S. Publication 2001/0028456).

Regarding claim 4, Kumasaka et al. anticipate the electron beam irradiation apparatus according to claim 1, but fail to disclose an inert gas atmosphere.

Nishi discloses an electron beam irradiation apparatus according to claim 1, wherein an interior of said shield container is set in an atmosphere of an inert gas (see [0146]), and said shield container is provided with a gas introduction port (Fig. 2, elements 16A-16E) and a gas discharge port (Fig. 2, elements 17A-17E) from which the inert gas flows in the vicinity of said irradiation window.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron beam irradiation apparatus of Kumasaka et al. to include a shield container with an inert gas atmosphere.

Motivation for such combination is to increase irradiation beam transmittance (see Nishi [0005]).

Regarding claim 6, Kumasaka et al. anticipate the electron beam irradiation apparatus according to claim 1, but fail to disclose an oxygen concentration meter.

Nishi discloses an electron beam irradiation apparatus according to claim 1, wherein an oxygen concentration meter for measuring an oxygen concentration within said shield container is provided (see [0192]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron beam irradiation apparatus of Kumasaka et al. to include an oxygen concentration meter.

Motivation for such combination is to monitor and control beam absorption (see Nishi [0005] and [0192]).

Regarding claim 15, Kumasaka et al. anticipate the electron beam irradiation method according to claim 13, but fail to disclose an inert gas atmosphere.

Nishi discloses an electron beam irradiation method according to claim 13 further comprising the steps of depressurizing an interior of said shield container and is thereafter replacing in the interior an inert gas atmosphere by introducing an inert gas (see [0151]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron beam irradiation apparatus of Kumasaka et al. to include a shield container with an inert gas atmosphere.

Motivation for such combination is to increase irradiation beam transmittance (see Nishi [0005]).

Regarding claim 16, Kumasaka et al. and Nishi disclose an electron beam irradiation method according to claim 15, as noted in the obvious combination above, further comprising the step of controlling a flow rate of the inert gas while measuring an oxygen concentration within said shield container (see Nishi, [0190]).

Regarding claim 17, Kumasaka et al. and Nishi discloses an electron beam irradiation method according to claim 15, as noted in the obvious combination above, further comprising the step of flowing the inert gas through the vicinity of said irradiation window toward a gas discharge port (Nishi, Fig. 2, elements 17A-17E) from a gas introduction port (Nishi, Fig. 2, elements 16A-16E), thereby cooling off the vicinity of said irradiation window.

5. Claims 4, 6, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masafumi (JP Publication 2002-163845) in view of Nishi (U.S. Publication 2001/0028456).

Regarding claim 4, Masafumi anticipates the electron beam irradiation apparatus according to claim 1, but fails to disclose an inert gas atmosphere.

Nishi discloses an electron beam irradiation apparatus according to claim 1, wherein an interior of said shield container is set in an atmosphere of an inert gas (see [0146]), and said shield container is provided with a gas introduction port (Fig. 2, elements 16A-16E) and a gas discharge port (Fig. 2, elements 17A-17E) from which the inert gas flows in the vicinity of said irradiation window.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron beam irradiation apparatus of Masafumi to include a shield container with an inert gas atmosphere.

Motivation for such combination is to increase irradiation beam transmittance (see Nishi [0005]).

Regarding claim 6, Masafumi anticipates the electron beam irradiation apparatus according to claim 1, but fails to disclose an oxygen concentration meter.

Nishi discloses an electron beam irradiation apparatus according to claim 1, wherein an oxygen concentration meter for measuring an oxygen concentration within said shield container is provided (see [0192]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron beam irradiation apparatus of Masafumi to include an oxygen concentration meter.

Motivation for such combination is to monitor and control beam absorption (see Nishi [0005] and [0192]).

Regarding claim 15, Masafumi anticipates the electron beam irradiation method according to claim 13, but fails to disclose an inert gas atmosphere.

Nishi discloses an electron beam irradiation method according to claim 13 further comprising the steps of depressurizing an interior of said shield container and is thereafter replacing in the interior an inert gas atmosphere by introducing an inert gas (see [0151]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron beam irradiation apparatus of Masafumi to include a shield container with an inert gas atmosphere.

Motivation for such combination is to increase irradiation beam transmittance (see Nishi [0005]).

Regarding claim 16, Masafumi and Nishi disclose an electron beam irradiation method according to claim 15, as noted in the obvious combination above, further comprising the step of controlling a flow rate of the inert gas while measuring an oxygen concentration within said shield container (see Nishi, [0190]).

Regarding claim 17, Masafumi and Nishi discloses an electron beam irradiation method according to claim 15, as noted in the obvious combination above, further comprising the step of flowing the inert gas through the vicinity of said irradiation window toward a gas discharge port (Nishi, Fig. 2, elements 17A-17E) from a gas introduction port (Nishi, Fig. 2, elements 16A-16E), thereby cooling off the vicinity of said irradiation window.

6. Claims 4, 6, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (JP Publication 2001-202663) in view of Nishi (U.S. Publication 2001/0028456).

Regarding claim 4, Shin et al. anticipate the electron beam irradiation apparatus according to claim 1, but fail to disclose an inert gas atmosphere.

Nishi discloses an electron beam irradiation apparatus according to claim 1, wherein an interior of said shield container is set in an atmosphere of an inert gas (see [0146]), and said shield container is provided with a gas introduction port (Fig. 2, elements 16A-16E) and a gas discharge port (Fig. 2, elements 17A-17E) from which the inert gas flows in the vicinity of said irradiation window.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron beam irradiation apparatus of Shin et al. to include a shield container with an inert gas atmosphere.

Motivation for such combination is to increase irradiation beam transmittance (see Nishi [0005]).

Regarding claim 6, Shin et al. anticipate the electron beam irradiation apparatus according to claim 1, but fail to disclose an oxygen concentration meter.

Nishi discloses an electron beam irradiation apparatus according to claim 1, wherein an oxygen concentration meter for measuring an oxygen concentration within said shield container is provided (see [0192]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron beam irradiation apparatus of Shin et al. to include an oxygen concentration meter.

Motivation for such combination is to monitor and control beam absorption (see Nishi [0005] and [0192]).

Regarding claim 15, Shin et al. anticipate the electron beam irradiation method according to claim 13, but fail to disclose an inert gas atmosphere.

Nishi discloses an electron beam irradiation method according to claim 13 further comprising the steps of depressurizing an interior of said shield container and is thereafter replacing in the interior an inert gas atmosphere by introducing an inert gas (see [0151]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron beam irradiation apparatus of Shin et al. to include a shield container with an inert gas atmosphere.

Motivation for such combination is to increase irradiation beam transmittance (see Nishi [0005]).

Regarding claim 16, Shin et al. and Nishi disclose an electron beam irradiation method according to claim 15, as noted in the obvious combination above, further comprising the step of controlling a flow rate of the inert gas while measuring an oxygen concentration within said shield container (see Nishi, [0190]).

Regarding claim 17, Shin et al. and Nishi discloses an electron beam irradiation method according to claim 15, as noted in the obvious combination above, further comprising the step of flowing the inert gas through the vicinity of said irradiation window toward a gas discharge port (Nishi, Fig. 2, elements 17A-17E) from a gas introduction port (Nishi, Fig. 2, elements 16A-16E), thereby cooling off the vicinity of said irradiation window.

Allowable Subject Matter

7. Claims 5, 9-12, 18, 20, 21, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 23-41 are allowed.

Regarding claims 5 and 18, no reference alone or in combination discloses an inert gas flow rate adjusted by measured temperature.

Regarding claims 9 and 20, no reference alone or in combination discloses a combination of a disc shaped object, plurality of electron beam irradiation tubes, and a plurality of areas irradiated by electron beams.

Regarding claims 10, 11, and 21-41, no reference alone or in combination discloses a combination of a shutter member in between an irradiation window and object surface, a shutter driving mechanism, and blocking/permitting electron beams.

Regarding claim 12, no reference alone or in combination discloses a metallic shield container that shields electron beams from an irradiation window.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Naito (U.S. Patent 6,614,037).

Naito discloses an electron beam irradiation apparatus for ejecting electrons from a vacuumed environment into a gaseous environment.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Crystal Jones whose telephone number is 571-272-2849. The examiner can normally be reached on Monday through Friday, 8:30 a.m. to 6 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CJ

WAYNE YOUNG
SUPERVISORY PATENT EXAMINER